

Earth's Biological History

8.2 The student will demonstrate an understanding of Earth's biological diversity over time. (Life Science, Earth Science)

8-2.7 Summarize the factors, both natural and man-made, that can contribute to the extinction of a species.

Taxonomy level: 2.4-B Understand Conceptual Knowledge

Previous/Future knowledge: Students in 1st, 2nd, and 3rd grade studied factors that plants and animals need in order to survive. In 6th grade, students illustrated animal behavioral responses (6-3.5) and internal stimuli (6-3.6) that ensure their survival. In 7th grade (7-4.3), students explained how natural hazards and limiting factors affect populations. This is the first time that extinction of species is a concept.

It is essential for students to know that a species is extinct if no members of that species are still alive. Most organisms that have ever lived on Earth are now extinct.

Natural factors can cause extinctions such as has happened throughout Earth history.

- Organisms that could not survive changes due to volcanic eruptions and global warming, global cooling during ice ages, changes in oxygen levels in seawater, or a massive impact from an asteroid or comet became extinct.
- Natural extinctions have occurred throughout geologic history.
- Not all have been necessarily negative in that extinctions often clear the way for new kinds of life.

Man-made factors have caused extinctions in more recent times, such as the cutting of the rainforest regions, removing natural habitats, over-harvesting, and pollution.

- Many plants and animals are likely to become extinct in the near future if humans do not make changes in way they are damaging Earth, and removing the survival needs of many organisms.
- Human effects on the environment could threaten some biological resources that humans may need.

Species that have recently become extinct or that are endangered can be studied to discover what natural or man-made survival resources caused the extinction or endangerment and what could have been or could be done to prevent it from happening.

It is not essential for students to know the specifics about the extinction of any particular species. Students do not need to make value or moral judgments about what man has or has not done with regards to extinction or endangerment of species; they are not evaluating the topic.

Assessment Guidelines:

The objective of this indicator is to *summarize* the factors that contribute to the extinction of a species; therefore, the primary focus of assessment should be to generalize major points about natural and man-made contributions to extinction. However, appropriate assessments should also require students to *infer* whether presented information could lead to extinction of a species; *compare* natural factors with man-made factors that could cause extinction; or *exemplify* species that are presently extinct due to natural factors or human factors.